

IN THE CLAIMS

Please amend the claims as follows:

Claims 1-12 (Cancelled)

Claim 13 (Currently Amended): A process for producing hydrogen, comprising:
desulfurizing a hydrocarbon fuel by contacting the hydrocarbon fuel to an adsorbent comprising cerium oxide, primary particles of the cerium oxide having a mean crystallite size of 10 nm or less; and

subsequently reforming the desulfurized fuel by bringing the desulfurized fuel into contact with a catalyst comprising at least one member selected from the group consisting of a partial-oxidation reforming catalyst, an autothermal reforming catalyst, and a steam reforming catalyst;

wherein:

neither hydrogen nor oxygen is added while desulfurizing the hydrocarbon fuel; and
the cerium oxide is a cerium oxide that has been calcined at a temperature of from 120 to 400 °C, the cerium oxide being selected from the group consisting of cerium oxide alone, a mixture of cerium oxide and zirconium oxide, a mixture of cerium oxide and an alumina and cerium oxide carrying at least one metal selected from the group consisting of silver, copper, nickel, iron and manganese.

Claim 14 (Previously Presented): The process of claim 13, wherein the catalyst comprises at least one member selected from the group consisting of ruthenium and nickel.

Claim 15 (Cancelled)

Claim 16 (Previously Presented): The process of claim 13, wherein desulfurizing comprises removing at least one sulfur compound selected from the group consisting of carbonyl sulfide, carbon disulfide, hydrogen sulfide, mercaptans, sulfides, and thiophenes.

Claims 17-18 (Cancelled)

Claim 19 (Currently Amended): A fuel cell system, comprising:

a desulfurizer; and

a reforming apparatus;

wherein:

the desulfurizer comprises an adsorbent comprising cerium oxide having primary particles with a mean crystallite size of 10 nm or less, the desulfurizer being configured so that a hydrocarbon fuel can be contacted to the adsorbent; and

the reforming apparatus comprises a catalyst comprising at least one member selected from the group consisting of a partial-oxidation reforming catalyst, an autothermal reforming catalyst, and a steam reforming catalyst, the reforming apparatus being configured so that a desulfurized fuel can be contacted to the catalyst;

wherein:

the system is configured so that neither hydrogen nor oxygen is added when desulfurization is performed; and

the cerium oxide is a cerium oxide that has been calcined at a temperature of from 120 to 400 °C; and

the cerium oxide is selected from the group consisting of cerium oxide alone, a mixture of cerium oxide and zirconium oxide, a mixture of cerium oxide and an alumina and

cerium oxide carrying at least one metal selected from the group consisting of silver, copper, nickel, iron and manganese.

Claim 20 (Previously Presented): The process of claim 13, wherein the adsorbent has a specific surface area of 20 m²/g or more.

Claim 21 (Previously Presented): The process of claim 13, wherein the adsorbent has a specific surface area of 50 m²/g or more.

Claim 22 (Previously Presented): The process of claim 13, wherein the cerium oxide exhibits a cumulative hydrogen consumption, as calculated up to 600°C in a temperature-programmed reduction test, of 200 μmol/g or more.

Claim 23 (Previously Presented): The process of claim 13, wherein the cerium oxide exhibits a cumulative hydrogen consumption, as calculated up to 600°C in a temperature-programmed reduction test, of 300 μmol/g or more.

Claim 24 (Previously Presented): The process of claim 13, wherein the adsorbent contains a mixture of cerium oxide and at least one oxide selected from the group consisting of Al₂O₃, SiO₂, TiO₂, ZrO₂, and MgO.

Claim 25 (Previously Presented): The process of claim 13, wherein:
the adsorbent further comprises at least one element selected from the group consisting of elements belonging to Groups 1 to 15 in the periodic table; and

the at least one element is carried on cerium oxide.

Claim 26 (Previously Presented): The process of claim 25, wherein the cerium oxide on which the at least one element is carried is calcined at a temperature of 400°C or less.

Claim 27 (Previously Presented): The process of claim 25, wherein the at least one element is present in an amount of from 1 to 90 mass% based on a total mass of the adsorbent.

Claim 28 (Previously Presented): The process of claim 13, wherein the cerium oxide is a complex oxide comprising cerium and at least one metallic element other than cerium selected from the group consisting of elements belonging to Groups 2 to 16 in the periodic table.

Claim 29 (Previously Presented): The process of claim 13, wherein the hydrocarbon fuel is selected from the group consisting of LPG, town gas, natural gas, naphtha, kerosene, gas oil, ethane, ethylene, propane, propylene, butane, butene, methanol, and dimethyl ether.

Claims 30-31 (Cancelled).